Technology Primer SMIL:
A Language You Can Learn To Speak

SMIL allows web publishers to integrate power point presentations, video, audio and text into online multi-media documents

What is SMIL?

SMIL (pronounced "smile") stands for Synchronized Multimedia Integration Language. It is written as an XML application and is currently a W3C Recommendation, at version 2.0.

SMIL allows authors to create multimedia presentations to be delivered over the Web via a streaming server. Multi-media presentations written with SMIL enable time controlled integration of streaming audio, video, text, images, or other media types into a single presentation. The different elements can be scheduled to appear either in parallel or in sequence.

A typical SMIL presentation has the following characteristics:

- The presentation is composed from several components that are accessible via URL's, e.g. files stored on a Web server.
- The components have different media types, such as audio, video, image or text.
- The begining and end times of different components are specified relative to events in other media components. For example, in a slide show, a particular slide is displayed when the narrator in the audio starts talking about it.
- Familiar looking control buttons such as stop, fast-forward and rewind allow the user to interrupt the presentation and to move forwards or backwards to another point in the presentation.
- Additional functions are "random access", i.e. the presentation can be started anywhere, and "slow motion", i.e. the presentation is played slower than at its original speed.
- The user can follow hyperlinks embedded in the presentation.

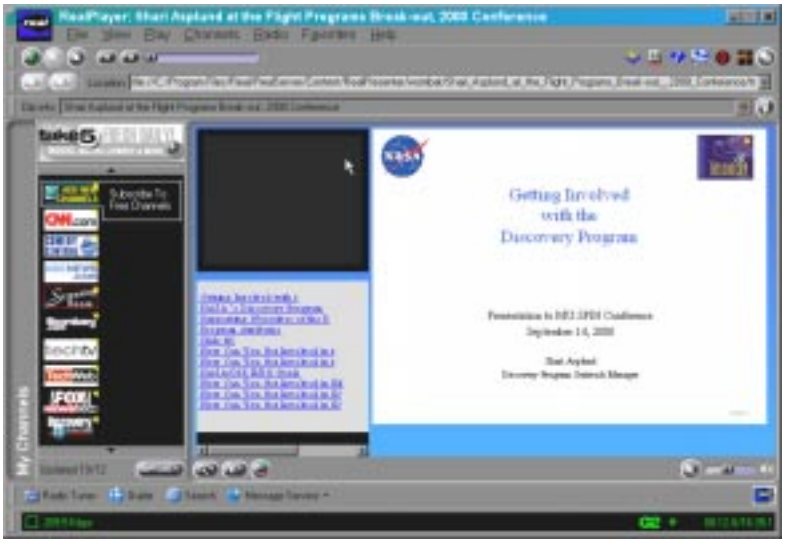
The SMIL language has been designed so that it is easy to author simple presentations with a text editor. The key to success for HTML was that attractive hypertext content could be created without requiring a sophisticated authoring tool. The SMIL language achieves the same goal for synchronized hypermedia.

The following are examples of applications that can be created using SMIL:

- Photos taken with a digital camera can be coordinated with a commentary
- Training courses can be devised integrating voice and images.
- A Web site showing the items for sale, might show photos of the product range in turn on the screen, coupled with a voice talking about each as it appears.
- Slide presentations on the Web written in HTML might be timed so that bullet points come up in sequence at specified time intervals, changing color as they become the focus of attention.
- On-screen controls might be used to stop and start music.

Benefits of Using SMIL

The MU-SPIN project publishes online proceedings from its annual conferences and workshops. These proceedings consist of several media types, including online versions of Power Point presentations, streamed video, and abstracts. Without SMIL, we have no way of integrating these different media types, particularly the Power Point presentations with the streaming video.



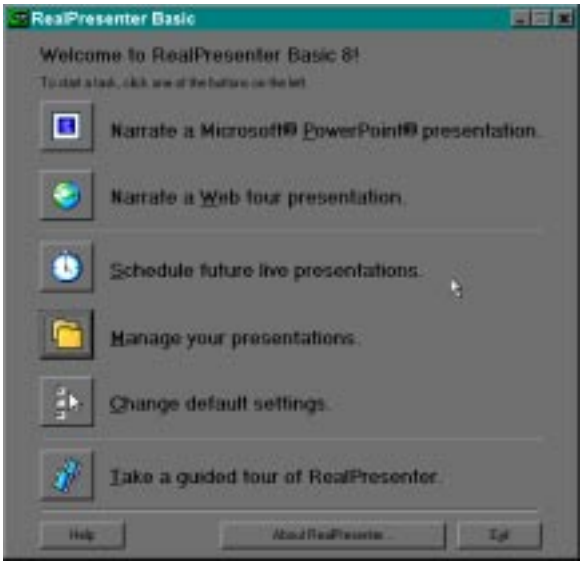
SMIL allows MU-SPIN to integrate Power Point presentations from the annual users conference with the video that we shoot at the conference, so that we can create a presentation that would stream over the net and would show a speaker describing a particular slide in his/her presentation, with the slides automatically advancing as the speaker described them. The result is an electronic presentation that would be very similar to what was actually given at the conference- see the example above, which shows the title slide from a conference presentation, with a text index in the left lower pane, and the video window in the upper left pane.

The Downside of SMIL

SMIL is complex to use. As described below, SMIL uses up to 5 different file types to display a single presentation. These files are related to each other in complex ways, and in order for a streamed SMIL presentation to work properly, these relationships must be set up and maintained, including during the publishing process. If any changes are made to a presentation, it usually means that those changes must be reflected in more than one file. This fact also limits the portability of SMIL presentations.

How to Create a Presentation Using SMIL

The easiest way to create a SMIL presentation is to download a free utility from Real Networks called RealPresenter Basic. This utility is basically a SMIL wizard that automates the process of creating, integrating and timing your presentation, and adds the functionality of being able to manage the presentation after it has been created. RealPresenter can be downloaded from: http://www.realnetworks.com/products/presenter/info.html

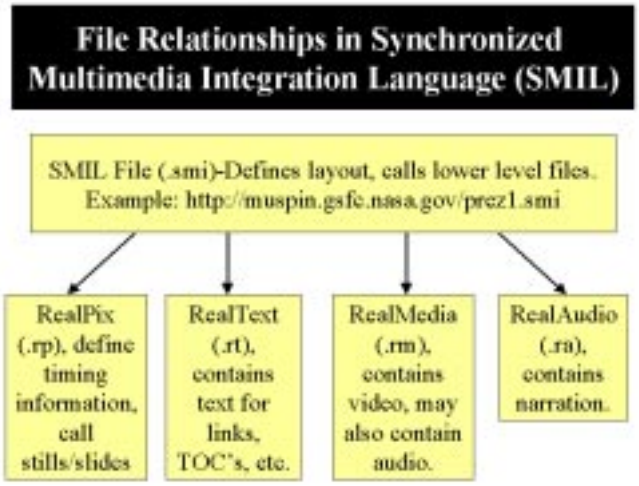


There are 2 versions of RealPresenter, a free basic version that does not automate publishing to a web server, and RealPresenter Plus for $99.95 that will automatically copy all files to a web server and set up the links for you. The MU-SPIN Project staff did not find that RealPresenter Plus offered a big advantage over the free offering.

The SMIL presentation can be manually modified after creation in a similar way that a HTML file can be modified. SMIL files are text and can be edited with any text processor.

The MU-SPIN Project Office found that the easiest way to create customized SMIL presentations was to use RealPresenter to create a basic online presentation, and then go in and taylor the SMIL files to the particular need. This is a little more complex than HTML because of the existence of several file types that are called from the main SMIL file, which acts as "the director of the orchestra." (see diagram below). These types are:

- SMIL (.smi) – this is the main file that is called directly from a URL, which can be typed into a browser or embedded in a web page. The SMIL file describes the layout of the player window, the size of the window, and contains references to the other file types that are called when needed.



- Real Pix (.rp) – these files are referenced in the main SMIL file, and in turn call up the still images, usually JPEGs. They also include timing information that tell the player which images come when in the presentation, and how long to keep them up for.
- Real Text (.rt) – these files are called from the main SMIL file, and contain text that can be used, for example, in a table of contents that can be displayed in a part of the player window (see the example player window above to see how this looks).
- Real Media (.rm) – this is the streaming video file.
- Real Audio (.ra) – this is the streaming audio file, which is created either by narration into RealPresenter, or from a video tape by RealPresenter.

References and Tutorials

Real Networks SMIL Guide and Reference: http://service.real.com/help/library/guides/production/htmfiles/intro.htm

SMIL Tutorial: http://www.helio.org/products/smil/tutorial/

The LakeChamplain.com Directory – SMIL:http://search.lakechamplain.com/cgibin/categories/Computers/Data_Formats/Markup_Languages/SMIL/

The WebDeveloper.com Tutorial: RealSystem G2 & SMIL: http://www.webdeveloper.com/advhtml/advhtml_tutorial_G2SMIL.html

WebDeveloper.com Advanced HTML: CSS, DHTML, XML, SMIL http://www.webdeveloper.com/advhtml/index.html

ZDNet: d e v e l o p e r: SMIL: The New Web Format For Multimedia: http://www.zdnet.com/devhead/stories/articles/0,4413,2195172,00.html